Smoky Mountain Astronomical Society

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S.C.R.A.P.S.

Society's ChRonological Astronomical PaperS

From the Chair
By Bob Arr

This month we inaugurate an effort that has been a long time coming--a beginner's astronomy course that can be repeated whenever beginners join us. Ken Ferguson has put it together. It's essentially an explanation of what we find fascinating in the sky. Whenever we get two or three newbies, we'll offer them the course. Some members are mentors, but others who are not mentors are nevertheless looked up to by newbies as older and wiser. They get asked questions, too. So I have asked Ken to present the beginner's course to the entire membership, to serve as a common reference for future dialogs.

If you or some member of your family is new to astronomy and curious, I really encourage you (and yours) to attend this presentation. We are embarked on an effort to bring newcomers into this wonderful hobby. This course, plus individual attention to beginners' needs, and mentors who have volunteered to work in the field, are our tools. Please join us.

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The change in meeting date from April 12 to April 5 was caused by Chilhowee Park pre-empting all of the pavement in the park to support their "Corvette Expo" car show. The entire Discovery Center will be closed April 12-14.

April Meeting
New Time: 7:00 PM
New Date: 1st Friday in April–the 5th

Presentation for April: "Through Eyes of Silicon, Backyard Astronomy in the 21st Century"

Mike Fleenor, past chair of SMAS, will present a program about viewing the heavens from the middle of a light-polluted environment, his own backyard. Before you conclude that this is primarily wishful thinking, you ought to visit his website, http://user.icx.net/~mfleenor/observatory.html and see for yourself. These CCD images are stunning, and can be viewed with a computer anytime, anywhere, and even printed out in full color. There's not a telescope in SMAS that produces such astounding deep sky images. CCD imaging can and does eliminate light pollution, and is a fascinating new technology in astronomy.

M27 The Dumbell Nebula
Taken By Mike Fleenor

ADAPTIVE OPTICS (PART 3)

By Michael Littleton

AO Case Study: IR Imaging of Star Formation

An example of the current state of adaptive optics (AO) is the high-resolution IR study of ultra-compact star-forming regions with 4 meter class telescopes at the European Southern Observatory. Most galactic massive star-forming regions are more distant than 1000 parsecs. The great distance of the regions and the glow of the nebular background necessitate the use of AO to resolve the regions. AO reduces the background by a factor of 10 compared to observations without AO.

Selection of potential targets for resolution of star-forming regions required identification of those regions with a bright natural guide star (NGS) with 20 arcseconds of the target. This was difficult because, by their very nature, star-forming regions are deeply embedded in shrouding nebula. For most objects in the study, the resolution was less than the diffraction-limited resolution, but was superior to the seeing without AO. This was because many of the NGSs were close to the limit of the AO system ($\approx 13^{th}$ magnitude) and well off axis from the science target. The study had spatial resolution corresponding to 600 AU at a distance of 3000 parsecs in the IR. For perspective, Pluto is at 40 AU and α Centaurus is at 270,000 AU.

Star Forming Region in the Southern Sky Astronomy Picture of the Day 12/22/01

Observations of many of the targets during the study revealed the stars exciting the star-forming regions. However, in a number of the objects, the exciting stars could not be imaged from the surrounding nebula. Nor did the study reveal the presence of disks predicted around massive stars by one model of ultra-compact star-forming regions. The study theorized that these disks may be smaller than the resolution of the telescope or destroyed by the massive stars. The next generation of AO for the Very Large Telescope uses IR (as opposed to visual) wavefront detection and will provide another twofold increase in resolution. This system should answer many questions about massive star formation.

APRIL STAR PARTIES BY SHAWN GRANT

April is spring time and that means galaxies. The two star parties for April are on Saturday the 6^{th} and the following Saturday the $13^{th.}$ The location for both dates will be the traditional Look Rock. Directions for this location are available at http://www.smokymtnastro.org/smas/directions.htm There are plenty of objects to see at both star parties. Comet Ikeya-Zhang will be low in the northwestern horizon just after sunset. Be sure to look for this comet the nanosecond it gets dark enough to see or it will get too low to see. It will be around 5^{th} magnitude and makes a great binocular or telescope object. There will be plenty of planets to observe. Venus, Mars, Jupiter and Saturn will be blazing brightly in the evening sky. On the 6^{th}, the Great Red Spot will be visible just after sunset. It will be visible till 21:00. The moons won't be doing anything special. On the 13^{th} the Great Red Spot will be visible dead center right after sunset. You can see the Great Red Spot until 22:00. Also about 22:05 watch for Europa to emerge from Jupiter's Shadow.

The suggested objects to observe for beginners are the galaxy trio M65, M66, and NGC 3628, located in Leo. All three galaxies are bright and can all be seen in a wide-field eyepiece. The intermediate list is the Galaxy NGC 2903 just south of the head of Leo and the galaxies NGC 3371, M105, M96 and M95. T he advanced list and the Sasquatch list are grouped together. It will be the galaxy cluster A1656. It is located about a degree and a half west of the star Beta Coma Berenices. The cluster is 2.5 degrees x 2.5 degrees and has 120 galaxies. Guide rates its magnitude as 13.5. Many galaxies can be seen in scopes as small as ten inches. This cluster is a lot of fun to explore. I have viewed it many times. I will bring charts for the galaxy cluster and Ikeya-Zhang, but not for the other list because those objects can be found in almost any star atlas.

Sunset at 19:03 on the 6^{th} and we get an extra hour to observe due to daylight savings. On the 13^{th} the sun sets at 20:09, so see you then!

MARCH MEETING
by Lee Erickson

The meeting began at 8:00 on March 8th at the Discovery Center, with a presentation by former Knoxville mayor, Randy Tyree, on "Universe Knoxville" or “1982 the World, 2002 the Universe”. Developers are in the process of putting together private funding to start the project. The goal is $105 Million by early summer with hopes to break ground late summer 2002.

There were 27 persons in attendance, five were guests and a new member, Sue Stokes. WELCOME SUE! Also visiting was George Weems. George lives in Kentucky, but was once a member. George figured the club's 20-inch telescope mirror (Sasquatch). George recounted how the current mirror was the third attempt. The first two were broken.

Presentation:
Bob Arr presided and the club meeting began at 9:00, in with a new format. First, there was an introduction to the night sky presented by Charles Ferguson. Charles discussed the three constellations of Orion, Canis Major and Gemini. The intent of the presentation was to help beginners learn their way around the sky and provide astronomical objects to find.

Robb Feldhege, the club’s Internet astronomer, explained some of the information available free on the internet. Robb says to start by going to http://www.hotfiles.com. Then read about the two programs "Winstars" and "Adastra Freestar". Download one or both and give them a spin. Shawn Grant also suggested two programs "Hallo northern sky" available at: http://www.hnsky.org/software.htm and "Cartes du Ciell / Sky Charts News" available at: http://www.stargazing.net/astropc/index.html.

Shawn announced two star parties this month and suggested some targets for all levels of observers. Shawn especially encouraged us to look for the new comet Ikeya-Zhang. Janice and I saw the comet from our back yard the Sunday evening following the meeting. I’m reminded of Hyakutaki. It is prettier than Hale Boop, but not nearly as bright as Hyakutaki.

Bill Burgess provided further details of the Telescopes for Kids Project. Burgess Optical will donate materials for 10 scopes for SMAS to assemble. The persons helping with assembly will be able to nominate an organization to receive one of the scopes. If there are more nominations than scopes, the winning organizations will be drawn from a hat. It will be up to each winning organization to select its winning kid. Bill plans to have a tube painting party with the return of warmer weather.

Paul Lewis explained the program, Telescope Making for Teachers. Paul has arranged for classes this summer where middle and high school teachers will have an introduction to astronomy and will construct a telescope for themselves during the class.

Dave Fields invited SMAS members to attend the observing events held at the Roane State Community College Tamke-Allen Observatory. Public stargazing is held the first Friday on the month, and teachers and students stargazing is held on the third Saturday of each month. More information is available at http://www.rscc.cc.tn.us/obs/.

Brent Holt followed up on his display last year of the azimuth clutch for his future telescope by displaying the right ascension ring gear and clutch. This is an amazingly beautiful work of machining! The gear is about 17.5 inches and he guessed weighed about 70 to 80 pounds.

New Business:
Proposal was presented to change the meeting start time to 7:00 PM to allow those who live far away to get home at an earlier hour. The motion passed. The April meeting will start at 7:00 PM. Please, make a note of it.

PUT DOWN THAT TV CONTROLLER!

Share your astronomical experience with the rest of SMAS and everyone on the Internet by writing an article for SCRAPS. Contact Mike Littleton at (865) 671-1022 or email littlen@ix.netcom.com.

Roane State Community College Observatory

Dr. Dave Fields, director of the RSCC observatory 5 miles south of Harriman, has renewed his invitation to members of SMAS to use his facility to observe. High above Watts Bar Lake, the site has an excellent dark location, a new building/classroom, a separate dome with 8" refractor, a large paved viewing area, piers for telescopes with 110v outlets, and plenty of parking. For SMASers in west Knox county and farther west, it's really a wonderful place to observe--newbies, mentors and grandfathers alike. Dave is a former member of SMAS.

Website: www.rscc.cc.tn.us/obs/
Email: fieldsde@aol.com
Phone: (865) 882-4533 (RSCC Math-Sciences Division)

Everyone is invited to visit the RSCC Tamke-Allan Observatory on Friday, April 5. If skies are clear, we'll start touring the observatory and looking for planet Venus and the new comet, Ikeya-Zhang at 7 PM. Mars, Saturn and Jupiter will be visible much of the evening. We'll have a general discussion of "What's up Tonight" inside the classroom at 8 PM. We'll be there as planned whatever the weather, unless the roads are dangerous. This will be a good night for constellations and deep-sky objects.

For directions to the Observatory, check the observatory web site at **www.rscc.cc.tn.us/obs.**

Bring cookies or a snack to share, binoculars or telescope and a red-light flashlight if you have them, a notebook, an alert mind, and some warm clothes. If you'd like to work or to meet and assist other visitors at the observatory, please mention your interest.

Amateur astronomers and students are ALWAYS invited!

Storing a Dobsonian

By The Wiz

Dear Wiz,
Someone told me I was insensitive to my mirror's warm up after a night of viewing. They said it could easily be dewing up inside my house, but I was oblivious to it. Is this true? R. Skul

Dear Rocky,

It's true. In fact, it could happen in your van or garage. It all depends on the relative humidity. Your mirror eventually cools to the ambient temperature when viewing. Because the inside of your house is warm, it contains more water vapor than the outdoor air, except in the summer when you run your air conditioner. If you bring you mirror in, your warm, wet air will almost instantly start condensing on your cool mirror.

If you leave the mirror in your van or garage, the same thing still happens the next morning as the outdoor air warms and picks up moisture. In fact, a mirror stored outdoors goes through this cycle every night, whether you view with it or not. Each time, a tiny bit of airborne pollution is deposited on the surface. After many months, you will definitely start losing reflectivity.

What to do? Storing the mirror in an unheated place with relatively stable temperature is the first priority. Leave the mirror in your telescope, but maneuver the telescope so that the mirror rests on its edge, not its back. Less dew and debris collect on the surface in this attitude. Finally, put a good dust cover over the whole telescope.

Stay dry. The Wiz

Thanks to Starmaster Telescopes

A Review of Guide Version 8 By Shawn Grant

Among Guide 8's many new features are the addition of new data sets and corrections made to some older data sets. Tycho 2 data has been added to Guide 8. It is a catalog of stars created from the data generated from the Hipparcos satellite. It measures positions, magnitudes and other data for stars to the highest accuracy possible. Tycho 1 data is still included (with its 2.5 million stars), and combined with Tycho 2 will make occultation calculations and visual magnitude estimations more accurate.

The Guide Star Catalog 1.1 was updated to version 1.3 for higher astrometric accuracy.

Another great data set that was added is the new LEDA galaxy project. The catalog now has over a million galaxies. While smaller amateur telescopes can't see most of those galaxies, it is interesting data for those who want to know more about the faint obscure galaxies because they are interested in cosmology. Also, CCD imaging is growing in popularity and it is possible to image some of those galaxies with a CCD camera on a larger amateur telescope. The person who images some of those galaxies can use Guide to identify them.

Clementine data has been added to produce a wonderfully detailed lunar map. Guide 7 was capable of this, but the data had to be purchased separately from NASA. It is now included free.

The last bit of data that was added is Digital Sky Survey images for many deep sky objects. The images are of considerably better quality then the Real Sky CDs. When you zoom in (level 8) on a deep sky object Guide will display the DSS images in the background of the chart. Of course you can turn this off or use Real Sky CDs or download DDS from the Internet and use it. You can also use your own CCD images provided they are in FITS format.

Guide predicts occultation of anything that can occult anything else, such as the moon and a planet, moon and a star, asteroid and a star, a planet and a planet, and lunar and solar eclipses. In other words, anything that can occult except someone's big head blocking your view at a movie theater. It will display a map of the earth showing where you can see the occultation and, if you click at a certain location, it will tell you the occultation time for that location to the second. You can also go to the sky view and animate the occultation.

Guide displays photo-realistic renderings of the planets and some of their moons. It also labels many geographical features on the planets and some of their moons. For example, if you zoom in on Mercury you will see the craters, valleys and mountains and they will be labeled (provided you have that turned on.) On Jupiter you will see the belts and the great red spot. Guide will predict when you can see the Great Red Spot.

Guide plots every known moon of every planet in the solar system. Not just Jupiter's brightest 4 or a few of Saturn's: it plots all of them. Guide will also render a shadow on a planet whenever a moon is casting that shadow.

In future articles, I will continue to tell how to get the most out of Guide. In the meantime, I have posted many screen shots of Guide which can be found at: http://www.shawngrantsworld.com/astronomy/guidescreenshots.htm Enjoy using Guide.

For Sale or Wanted

Wanted

An equatorial mount and tripod sufficient to carry a 4-inch refractor of about 15-pounds. It will be used with a SMAS "loaner" telescope.
Contact: Tom Rimmell at 983-7834 or email trimmell@chartertn.net.

April 2002

Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1	2	3	4 Last Qt	5	6
7	8	9	10	11	12 New Moon	13
14	15	16	17	18	19	20 1st Qt Moon
21	22 Lyrids Peak	23	24	25	26 Full Moon	27
28	29	30				

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Shawn Grant

SCRAPS Editor:
Mike Littleton

SMAS Website:
http://www.smokymtnastro.org/

Webmaster:
Mike Fleenor

Schedule of Events

- **4/3/02** The public is invited to attend the monthly meeting of ORION at 1900 h (7 PM) on Wednesday, April 3 at the Oak Ridge Civic Center. David Auble of the NOAA Atmospheric Turbulence and Diffusion Laboratory will discuss "Wind Measurements Under Extreme Conditions."
- **4/5/02** SMAS meeting 7 PM (new time) at the Discovery Center: The guest speaker is Mike Fleenor on CCD imaging
- **4/6/02** Star party at Look Rock
- **4/5/02 & 4/19/02** Public observing from the roof of the Physics Building at UTK
- **4/13/02** Star party at Look Rock
- **4/15/02** Venus sets at 9:57 PM; Mars sets at 11:05 PM; Jupiter transits at 6:38 PM and sets at 1:57 AM; Saturn sets at 11:48 PM
- 4/22/02 Lyrid meteor shower peaks in the predawn darkness. Expect 10-15 per hour

May Star Party

On May 3 and the star party will be at Bandy Creek campground at Big South Fork. Contact Paul Lewis at 974-7815 or gplewis@utk.edu" to reserve camping. There will be observing at Look Rock for those who cannot make it to Big South Fork.